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tions of DILLENIUS relate to "subjects so diverse as the investigation of the British Flora, especially that of Wales; the botanical exploration of North America; the botany of the exotics, especially succulents, cultivated in his time; and the classification of cryptogamic plants." The Dillenian herbaria are three: that of the *Synopsis*; that of the *Hortus Ellthamensis*; and that of the *Historia Muscorum*.—J. M. C.

Plant chemistry.—The original papers and addresses on plant chemistry, published by HELEN C. DeS. ABBOTT MICHAEL (*b.* 1857, *d.* 1904), have been collected and reprinted, together with a biographical sketch (110 pp.) and four literary papers, to form a neat volume.³ Mrs. MICHAEL'S scientific training was obtained under extraordinary difficulties, and her work was made somewhat scattering by reason of the very alertness and eagerness of her mind. Her contributions to a knowledge of the constituents of plants, especially the glucosides, are more valuable than her theories as to the correlation of plant form and classification with the nature and distribution of chemical compounds. The book in its editing shows some unfamiliarity with scientific names and terms. It is a worthy memorial to one whose work was cut short by an untimely death.—C.R.B.

Flora of Guatemala.—JOHN DONNELL SMITH has published as the eighth part of his *Enumeratio* an index⁴ of the preceding parts. The species are arranged alphabetically, and 7979 numbers are cited, representing 3736 species, 1189 of which are not contained in HEMSLEY'S *Biologia Centrali-Americana*. Incorrect determinations and faulty nomenclature are also corrected. The author is to be congratulated on the complete way in which he has investigated the flora of this region and organized his results.—J. M. C.

London botanic gardens.—M. PERRÉDÈS has brought together in a single publication⁵ a series of papers that appeared in the *American Journal of Pharmacy*. The three gardens described are Kew Gardens, The Royal Botanic Society's Gardens in Regent's Park, and The Chelsea Physic Garden. The numerous admirable illustrations that accompany the text make these gardens very real to the reader.—J. M. C.

Pflanzenfamilien.⁶—Parts 227 and 228 contain the completion of the Lembo-phyllaceae, and the presentation of Entodontaceae, Fabroniaceae, Pilotrichaceae, Nematocaeae, and Hookeriaceae, by V. F. BROTERUS. The third part of the

³ MICHAEL, H. A., Studies in plant and organic chemistry. 8vo. pp. 423. Cambridge: The Riverside Press. 1907. \$2.50.

⁴ SMITH, JOHN DONNELL, Enumeratio plantarum Guatemalensium etc. Pars VIII. pp. 221. Oquawka, Illinois: H. N. Patterson. 1907.

⁵ PERRÉDÈS, PIERRE ÉLIE FÉLIX, London Botanic Gardens. pp. 100. pls. 31. London: The Wellcome Chemical Research Laboratories. 1907.

⁶ ENGLER, A., und PRANTL, K., Die natürlichen Pflanzenfamilien. Lief. 227 und 228 und Ergänzungsheft II, Lief. 3. Leipzig: Wilhelm Engelmann. 1907.

second supplement continues the literature of 1899-1904 in reference to dicotyledons from Euphorbiaceae to Sapotaceae.—J. M. C.

Flora of Winneshiek Co., Iowa.—SHIMEK⁷ has published an account of the plants of one of the counties of Iowa, prefacing the annotated list by a discussion of the forest problem, ornamental plants, forage plants, weeds, and medicinal plants.—J. M. C.

Eucalyptus.—The eighth part of MAIDEN'S⁸ revision of *Eucalyptus* contains the description, synonymy, range, and affinities of seven species. This series, begun in 1903, now includes twenty-four species.—J. M. C.

Das Pflanzenreich.⁹—Part 28 contains the group Calceolarieae of Scrophulariaceae. The three genera are *Porodittia* (1 sp.), *Jovellana* (6 spp.), and *Calceolaria* (192 spp., with 9 new).—J. M. C.

NOTES FOR STUDENTS

Apogamy and apospory in ferns.—Professor FARMER and Miss DIGBY have published¹⁰ the results of their studies of apogamy and apospory in ferns. The forms described are *Lastrea pseudo-mas* vars. *polydactyla* Wills, *polydactyla* Dadds, and *cristata apospora* Druery; *Athyrium Filix-foemina* vars. *clarissima* Jones, *clarissima* Bolton, and *uncoglomeratum* Stansfield; and *Scolopendrium vulgare* var. *crispum Drummondiae*.

In *Athyrium Filix-foemina clarissima* Jones there is no change in the number of chromosomes in passing from the sporophyte to the gametophyte phase of the life-history; and there is no migration of nuclei from one prothallial cell to another. The embryo arises as a bud upon the gametophyte.

In *Athyrium Filix-foemina clarissima* Bolton there is no reduction of chromosomes, no true fertilization, no migration of prothallial nuclei, and the embryo develops from an unfertilized egg.

In *Athyrium Filix-foemina uncoglomeratum* Stansfield the embryo arises in connection with an archegonium, but details were not discovered. The number of chromosomes (about 100) is maintained throughout the life-history and there is no migration of prothallial nuclei.

In *Scolopendrium vulgare crispum Drummondiae* a remarkable condition is described. The number of chromosomes in sporophyte nuclei is about 100, in prothallial nuclei about 70, in archegonial nuclei about 80, and in antheridial

⁷ SHIMEK, B., Flora of Winneshiek County. Iowa Geol. Surv. 16:147-211. 1906.

⁸ MAIDEN, J. H., A critical revision of the genus *Eucalyptus*. Part VIII. pp. 211-254. pls. 37-40. Sydney: Published by State of New South Wales. 1907. 2s. 6d.

⁹ ENGLER, A., Das Pflanzenreich. Heft 28. Scrophulariaceae Antirrhinoideae-Calceolarieae von Fr. Kränzlin. pp. 128. figs. 21 (142). Leipzig: Wilhelm Engelmann. 1907. M6.40.

¹⁰ FARMER, J. BRETLAND, and L. DIGBY, Studies in apogamy and apospory in ferns. Annals of Botany 21:161-199. pls. 16-20. 1907.